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Docket No. 199178US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Takeshi Kusudou et al.

SERIAL NO: 09/703,718 GAU: 1755

FILED: November 2, 2000 EXAMINER:

FOR: CERAMIC-MOLDING BINDER

INFORMATION DISCLOSURE/RELATED CASE STATEMENT UNDER 37 CFR 1.97

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:
Applicant(s) wish to disclose the following information.

REFERENCES

- ☐ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ■ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☐ Each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ■ Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Norman F. Oblon
Registration No. 24,618

Frederick D. Vastine
Registration No. 27,013

22850
Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 10/98)

What is claimed is:

1. A vinyl alcohol polymer having an ethylene unit content of 2 to 19 mole %, a polymerization degree of 200 to 2,000, a degree of saponification of 80 to 99.99 mole % and a total content of carboxyl group and lactone rings of 0.02 to 0.4 mole %.

2. The vinyl alcohol polymer according to Claim 1, wherein the total content of carboxyl group and lactone rings satisfies the following formula (1):

$$-1.94 \times 10^{-5} \times P + 0.044 \leq \text{content} \leq -1.39 \times 10^{-4} \times P + 0.42 \quad (1)$$

wherein "content" (in mole %) represents the total content of carboxyl group and lactone rings, and P represents the viscosity average degree of polymerization of the vinyl alcohol polymer.

3. The vinyl alcohol polymer according to Claim 1, further having a 1,2-glycol bond content of 1.2 to 2 mole %, a molar fraction, based on vinyl alcohol units, of a hydroxyl group of vinyl alcohol unit located at the center of 3 successive vinyl alcohol unit chain in terms of triad expression of 65 to 98 mole % and a melting point of 160 to 230° C.

4. The vinyl alcohol polymer according to Claim 3, wherein the molar fraction, based on vinyl alcohol units, of a hydroxyl group of vinyl alcohol unit located at the center of 3 successive vinyl alcohol unit chain in terms of triad expression satisfies the following formula (2)

$$-1.5 \times Et + 100 \geq \text{molar fraction} \geq -Et + 85 \quad (2)$$

wherein "molar fraction" represents the molar fraction in mole % based on vinyl alcohol units of the hydroxyl group of

vinyl alcohol unit located at the center of 3 successive vinyl alcohol unit chain in terms of triad expression and "Et" represents the ethylene unit content in mole % of the vinyl alcohol polymer.

5. A vinyl alcohol polymer composition comprising a vinyl alcohol polymer (A) according to Claim 1 and an alkali metal (B) in an amount in terms of sodium of 0.003 to 1 part by weight based on 100 parts by weight of the vinyl alcohol polymer (A).

ABSTRACT OF THE DISCLOSURE

Vinyl alcohol polymers having an ethylene unit content of 2 to 19 mole %, a polymerization degree of 200 to 2,000, a degree of saponification of 80 to 99.99 mole % and a total content of carboxyl group and lactone rings of 0.02 to 0.4 mole % are excellent in thermal stability, water resistance, gas-barrier properties, water vapor-barrier property, stability of aqueous solution kept at low temperatures and biodegradability.